UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2002/01274

December 20, 2002

Mr. Fred P. Patron
Senior Transportation Planning Engineer
Federal Highway Administration, Oregon Division
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation for Coos Bay Railroad Bridge Rehabilitation Project, Coos County, Oregon.

Dear Mr. Patron:

Enclosed is the biological opinion (Opinion) prepared by the National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of funding the proposed Coos Bay Railroad Bridge Rehabilitation Project in Coos County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Oregon Coast coho salmon *(Oncorhynchus kisutch)*. As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the potential for incidental take associated with this action.

This Opinion also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR part 600).

If you have any questions regarding this consultation, please contact Jim Collins of my staff in the Oregon Habitat Branch at 541.957.3389.

Sincerely,

F.r Michael R Crowe

D. Robert Lohn
Regional Administrator

cc: Molly Cary, ODOT
Ken Franklin, ODOT
John Raasch, ODOT

Endangered Species Act - Section 7 Consultation
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL OPINION

Coos Bay Railroad Bridge Rehabilitation Project
Coos County, Oregon.

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA Fisheries, Northwest Region
Date Issued:	December 20, 2002
Issued by:	F.r Michael R Course D. Robert Lohn Regional Administrator
Refer to:	**2002/01274**

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1. ENDANGERED SPECIES ACT

1.1 Background

On October 30, 2002, the National Marine Fisheries Service (NOAA Fisheries) received a biological assessment (BA) and a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for the Coos Bay Railroad Bridge Rehabilitation Project. The Oregon Department of Transportation (ODOT) proposes replacement of the bridge, which crosses Coos Bay near the town of North Bend, Oregon. This biological opinion (Opinion) is based on the information presented in the BA and discussions with the applicant.

The FHWA determined that Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) may occur within the project area. OC coho salmon were listed as threatened under the ESA on August 10, 1998 (63 FR 42587), and protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). The FHWA, using methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), determined that the proposed action is likely to adversely affect OC coho salmon.

This Opinion is based on the information presented in the BA and developed through correspondence to obtain additional information and clarity. The objective of this Opinion is to determine whether the actions to remove the existing structure and construct a new structure are likely to jeopardize the continued existence of OC coho salmon. This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.

1.2 Proposed Action

1.2.1 Project Purpose

This project is designed to rehabilitate the Coos Bay Railroad Bridge, which crosses over Coos Bay. The bridge supports a single track on a 98.4 meter (m) timber north-approach trestle, 12 steel truss spans totaling 677.5 m, and a 173.4 m timber south-approach trestle. Span 8 is a 143.1 m movable swing span in the main shipping channel within Coos Bay. When open to marine traffic, the swing span allows a shipping channel width of 62.5 m on each side of the center support pier. The railroad bridge serves to link the Oregon International Port of Coos Bay to the rail system, which is linked to rail lines throughout the Northwest.

Inspections of the bridge revealed extensive corrosion on the steel truss section, deteriorated piles in the approach trestles, and scour around one of the support piers. The project will involve replacing corroded structural members and improving the coating system on the steel structures, as well as fortifying one pier footing and replacing some of the pilings that support the bridge approaches.

1.2.2 Steel Truss Repairs

The 12 span, steel truss sections of the bridge will require the replacement of several beams, approximately 6,000 rivets, and 1,200 lacing bars. In addition, the steel bridge rests on bearings atop the concrete piers, held in place by anchor bolts. The corroded bearings, or "roller nests" have all locked in the maximum expansion position. The corroded roller nests will be replaced with sliding bearing assemblies, consisting of a sheet bonded to a lower steel bearing plate and a polished stainless steel plate upper sliding surface edge welded to an upper steel bearing plate. The corroded anchor bolts will be replaced by core drilling around the existing anchor bolts and replacing them in-kind with new anchor bolts epoxy-bonded in the core-drilled holes. Historical drawings indicate that thin lead sheets were used between the concrete piers and the bearing pedestals to assure that the weight transfer through the bearing was uniform on the concrete. Removal of these lead sheets will be a part of the replacement process for these bearings.

These structural repairs on the various bridge spans are expected to take some four to five months to complete. All work on the steel truss will be completed above the mean higher high tide (MHHT).

1.2.3 Track Tie Replacement

Track ties need to be replaced across approximately two-thirds of the length of the steel spans to ensure the safe operation of the structure. The slender main members are highly susceptible to damage, buckling, and collapse from impact forces, which would compound the damage should a derailment occur. Ties can best be replaced with panelized track-tie sections, a standard railroad maintenance procedure. Since removal of the existing track-tie panels is already necessary to install stringer cover plates, the tie replacement should be done at the same time. The track rails may be reused. Current standards require the installation of a maintenance walkway to one side of tracks on bridges. The newer track-tie panels on Spans 1, 2, 9, 10, 11, and 12 already have extended sleepers at regular spacing to support a walkway. Extended sleepers (or intermittent longer ties), walkway planks, and cable handrails will be included as part of the track-tie replacement to provide a walkway across the 12 truss spans.

1.2.4 Coating System Rehabilitation

Due to the proximity of the bridge to the marine environment, the bridge was subjected to high concentrations of salt, which led to corrosion of the bridge surface and its interior properties. This resulted in a surface that no longer protects the structure from deterioration. This phase of the project includes removing the coating system in the areas where it is failing and reapplying a new zinc-based coating system.

The coating system rehabilitation process requires a controlled environment for successful adhesion to the bridge. In order to achieve this, a containment system with negative air will be employed, including an air ventilation and collection system to collect dust and filter it out of the air. This system normally requires air-impenetrable walls with rigid or flexible framing, fully sealed joints, airlock or resealable entryways, and negative air is achieved by forced or natural

air flow and exhaust air filtration. This process also ensures that the paint and all debris will be contained and would not enter the waterway.

1.2.5 Pier 8 Foundation Protection

The existing riprap around the pier base will be removed (likely with a clamshell bucket suspended from a barge-mounted crane) to allow for the driving of steel sheet piles around the existing footing. This riprap is approximately 14.6 m below mean low low water (MLLW) and consists of no more than 447 m^3. The riprap would be temporarily stockpiled as close as practicable to the pier for later use.

Steel sheet piles will be installed in a rectangle approximately 1 m outside of and around the existing pier footing. Each of the sheets would be lowered to the channel bottom via a barge-mounted crane, and will extend vertically for an estimated 15.6 m, so that their upper edge extends above mean high water. Several individual sheets would form each side of the enclosure. The sheets will be attached to each other at the edges by a knuckle joint with a groove. These sheets are often placed and driven in pairs. The sheets will initially be driven only a few feet in to withstand the current. Bracing will then be attached. Using either a vibratory hammer or an impact hammer supported by a barge-mounted, pile-driving rig, the sheet piles will be driven further into the substrate, sliding past each other as each one is driven in. Once completed, the piling would be embedded 4.6 m into the channel bottom. The contractor will install the sheet piles to completion in a continuous process over a condensed period of days. Once the sheet piles are in place, steel beams will be installed in a horizontal frame around the outside of the sheet piles at several vertical levels to strengthen the sheet piles against fluid pressures from the concrete fill.

Once the four-sided sheet pile structure is in place around the pier, any fish inhabiting the water in the enclosure will be removed and returned to the bay by an ODFW or ODOT biologist. Isolated salmonids or other fish will be removed by traps, nets, electrofishing, or other means before any dewatering or concrete pouring operations begin.

Once fish removal is complete, concrete will then be filled in behind the sheet pile cofferdam approximately 1 m above the existing pile cap. This would require a maximum of 534.4 m^3 of concrete. The footprint of the new concrete encasement around the pier footer is estimated to be 58.6 to 78.1 m^2.

After the concrete has cured, the steel sheet piling will be cut off flush with the top of the concrete. The existing riprap will then be replaced around the base of the pier footing.

To reduce debris accumulation, a fender system will be constructed along the side of the Piers 8 and 10 footers that are facing the navigation channel. The fender system will be designed to utilize UHMW (Ultra High Molecular Weight) polyethylene backed by steel, or possibly HDPE (High Density Polyethylene) "timbers," either alone or backed by steel. The assembled fender panels will be placed from either a barge or from the ends of Spans 7 and 9. The panels will be

connected together and anchored to the footings with steel bolts. Setting the panels into place and making the connections should take an estimated two weeks. The actions will most likely be accomplished from a barge-mounted crane when the tide is high enough to provide safe clearance. The total in-water work on Pier 8 is anticipated to last 45 days.

1.2.6 Trestle Bent Pile Replacements

On either end of the steel bridge spans, the approaches are timber trestle spans consisting of five or six piles per trestle bent. Five piles, and at least two square posts need replacement in these trestle bents (adjacent to Piers 1 and 14). These bents are in shallow tidal areas. The project proposes to replace all piles with steel piles at bents 20, 22, and 24. At Bent 25, one timber pile will be replaced with two steel piles. The existing track, ballast, deck, stringers, caps, and bracing will be removed as necessary to drive new piles at bents 20, 22, 24, and 25. This work will be performed from the railroad deck, using a rail-mounted crane.

Bents 20, 22, and 24 will be replaced with four-pile steel bents with steel caps and bracing. This operation will use a total of 12 steel H-piles. At Bent 25, two steel H-piles will be installed on either side of the failing central timber pile. In all cases, the steel piles will be driven between existing timber piles with an impact hammer supported by a rail or truck-mounted, pile-driving rig. The piles will be uncoated and approximately 0.3 m square.

An attempt will be made to completely remove the timber piles. If complete removal is unsuccessful, the timber piles being replaced will be cut off approximately 0.6 m above the mud line. The rail-mounted crane would remove the upper portion. The rot is at or near the mudline, and the piles may break.

The steel piles of bents 20, 22, and 24 will be connected together at the top with a steel cap beam and braced with diagonal and horizontal members. At Bent 25, the timber members removed for pile installation will be reinstalled. Damaged or deteriorated timber trestle and deck members will be replaced.

The in-water work on the pile bents is estimated to last 10 days. With a cross section of 0.3 m^2 apiece, the 14 new H-piles would cover approximately 4.2 m^2 of mudflat surface.

1.3 Biological Information

Within the Coos watershed, NOAA Fisheries listed the OC coho salmon as threatened under the ESA on August 10, 1998 (63 FR 42587). Protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

OC coho salmon are known to spawn and rear in the Coos watershed. Adult coho salmon enter the Coos River in late September and spawn from October through January, with the majority of spawning activity occurring in smaller, low gradient tributaries. Coho salmon use the Coos estuary within the project area primarily as a migration corridor and for juvenile rearing. The

downstream migration of coho salmon smolts typically occurs from early February through May, but may extend into June. Due to location of the project in the Coos estuary, OC coho salmon are not expected to be within the project area during the ODFW in-water work period (October 1 to February 15).

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the definition of the biological requirements and current status of the listed species, and the evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action. For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action.

1.4.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed coho salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list OC coho salmon for ESA protection and also considers new available data that is relevant to the determination.

The relevant biological requirements are those necessary for OC coho salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration and holding in the action area. The current status of the OC coho salmon, based upon their risk of extinction, has not significantly improved since the

species was listed. The Coos estuary serves as an adult and juvenile migration corridor, as well as juvenile rearing habitat.

1.4.2 Environmental Baseline

The current range-wide status of the identified ESU may be found in Nickelson *et al.* (1992) and Weitkamp *et. al* (1995). The identified action would occur within the range of OC coho salmon. The action area is the area that is directly and indirectly affected by the action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activity includes the immediate area where the Coos Bay Railroad Bridge Rehabilitation Project would occur, and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is the channel and adjacent riparian area for approximately 500 m upstream and downstream of the project site. Temporary indirect impacts (disruption of primary productivity and food resources), and potential direct affects (sediment, pollutant discharge and hydraulics) to Coos Bay would be caused by the in-water work.

The Coos Bay estuary is the second largest estuary in Oregon. It is approximately 13,300 acres in size (Cortright *et al.* 1987), averaging nearly 1 km wide by 24 km miles long. The bay has approximately 30 tributaries. The major tributary into Coos Bay is the Coos River from the east, which joins the bay approximately 7.5 km upstream from the project site. The Coos Bay estuary is classified as a drowned river mouth-type estuary, where winter flows discharge high volumes of sediment through the estuary. In summer, when discharge is lower, seawater inflow dominates this type of estuary. Extensive filling and diking of Coos Bay and its sloughs, estuaries, and tributaries have changed the form and function of the estuary. Approximately 90% of Coos Bay marshes have been permanently lost to dikes and landfills (Proctor *et al*.1980). Approximately 72,000 tons of sediment, mainly silts and clays, pour into the Coos Bay estuary every year (Schultz 1990).

Based on the best available information regarding the current status of OC coho salmon range-wide, the population status, trends, genetics, and the poor environmental baseline conditions within the action area, NOAA Fisheries concludes that the biological requirements of OC coho salmon are not currently being met. Degraded habitat, resulting from agricultural practices, forestry practices, road building, and residential construction, indicate that many aquatic habitat indicators are not properly functioning within the Coos watershed. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of OC coho salmon.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

The following proposed actions have the potential to impact OC coho salmon:

Construction Equipment. Accidental release of fuel, oil, and other contaminants may occur. Operation of back-hoes, excavators, cranes, and other equipment requires the use of fuels, lubricants, *etc.*, which, if spilled into a water body channel, or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non-target riparian vegetation (Spence *et al.* 1996). To minimize the potential of pollutants entering the waterway, construction equipment, materials and refueling would be staged at least 45 m from the MHHT.

Pile Installation. NOAA Fisheries expects that there will be short-term effects to coho salmon resulting from installation of the proposed piles and containment structure. Timing of the pile installation and removal will occur during the designated in-water work period. The short-term effects associated with pile installation will be: (1) Increases in sedimentation and turbidity; (2) loss of benthic habitats; and (3) displacement of coho salmon. Long-term spatial and temporal effects may include changes in hydraulics and channel geometry, loss of benthic resources, and disruption of salmonid migration patterns. Additionally, these effects may reduce light penetration and inhibit primary production in the lower estuary, depending on the intensity of the effect.

Contaminated Water. Contaminated water will be generated from the construction of the proposed scour protection. Additionally, untreated stormwater runoff from the barge will be directly imported into the Coos Estuary. Contaminated water, especially water with a high or low pH, has the potential to injure of kill fish. Contaminated water is defined as water with an increase in turbidity that is equal to or greater than 10% of background levels and/or water with a pH greater than or less than one point of background levels. Contaminated water from the barge use will be minimal in relation to the estuary and is not expected to have more than a negligible impact. Untreated stormwater runoff is not expected, in quantifiable terms, to adversely affect coho salmon.

Sedimentation. Potential sedimentation impacts to listed salmonids from the proposed actions include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting from construction. Potential indirect effects include behavioral changes resulting from elevated turbidity levels (Sigler *et al.* 1984, Berg and Whitman *et al.* 1982, Gregory 1988).

The influences of suspended sediment and turbidity to fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish is the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters by salmonids may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbidity plumes (Sigler *et al.* 1984, Lloyd 1987, Scannell 1988). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a documented positive effect is providing refuge and cover from predation (Gregory and Levings 1998).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorus fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine, redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991). Because the potential for turbidity should be localized and brief, and the potential for fish being present is minimal, the probability of direct mortality is negligible.

Construction-related effects necessary to complete the proposed action would be minimized by implementation of effective erosion and pollution control measures, and completing all work within the MHHT during the ODFW approved in-water work period.

Stream Hydraulics. The placement of fill material below the MHHT would typically result in simplification of habitat and increased stream velocities under the structure. However, the small amount of fill proposed in relation to the size of the bay at the site of the bridge crossing is negligible, so hydraulics are not expected to be impacted.

Shading-Barge Use. Barges supporting heavy equipment may be used to install the proposed scour protection. Shading is not expected, in quantifiable terms, to lead to an increase in predation on coho salmon. Barge use is not expected to adversely affect coho salmon.

Scour Protection. The proposed scour protection will permanently eliminate a maximum of 78.1 m^2 of estuarine habitat for coho salmon. Loss of this habitat, while long-term, is not expected to adversely affect coho salmon migration patterns or rearing behaviors, or significantly impact the overall functions of deep pool habitat for salmonids, or significantly alter the ecology of the estuary. Changes in hydraulics from the new footing are not expected to be significant.

Work Area Isolation and Fish Removal. Construction of the scour protection will require work area isolation from the flowing water. Fish removal activities will be in accordance with NOAA Fisheries' fish handling guidelines. Any ESA-listed fish removed from the isolated work area will experience high stress with the possibility of up to a 5% delayed mortality rate, depending on the rescue method.

Work area isolation can result in a loss of aquatic invertebrates due to dewatering or changes in water quality within the contained area. In addition, sediment-laden water created within isolated work areas could escape, resulting in impacts to the aquatic environment downstream of the project site.

The adverse effects of these activities on OC coho salmon and their riparian and aquatic habitats will be avoided or minimized by carrying out the construction methods and approaches described in the BA (pages 36-42).

1.5.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area is defined as Coos Bay, 500 m upstream and downstream of the Coos Bay Railroad Bridge.

Many actions occur within the Coos watershed, and within the action area itself. Non-federal activities within the action area are expected to increase with a projected 34% increase in human population over the next 25 years in Oregon (Oregon Department of Administrative Services 1999). Thus, NOAA Fisheries assumes that future private and state actions would continue within the action area, but at increasingly higher levels as population density increases. NOAA Fisheries assumes that future FHWA transportation projects in the Coos watershed would be

reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

1.6 Conclusion

NOAA Fisheries determined that, when the effects of the FHWA's proposed action (funding the Coos Bay Railroad Bridge Rehabilitation Project) are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of OC coho salmon. These conclusions are based on the following considerations: (1) All in-water work and other construction activities within the MHHT elevation would take place according to the ODFW in-water work period to protect fish and wildlife resources; (2) work area isolation (including use of NOAA Fisheries' guidelines for proper fish handling) and other conservation measures will be in place to avoid or minimize adverse affects to water quality; (3) potential effects of from the loss of habitat as a result of the scour protection are insignificant in relation to the size of the estuary, and (4) disturbance to tidally-influenced mudflats resulting from the pile replacement will be minimized by completing the work from the existing railroad bridge. Therefore, the proposed action is not expected to prevent or delay the achievement of properly functioning habitat conditions in the action area.

1.7 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reinitiation of consultation.

2. INCIDENTAL TAKE STATEMENT

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is

incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

2.1 Amount and Extent of the Take

NOAA Fisheries anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of OC coho salmon because of detrimental effects from sediment pulses, increased pollutant levels, and the slight possibility of juvenile presence in the vicinity of the project site during in-water work. NOAA Fisheries expects the possibility exists for incidental take of up to 20 juvenile coho salmon during work area isolation and handling of fish. Take resulting from the effects of other project actions covered by this Opinion is largely unquantifiable in the short term, and not expected to be measurable in the long term. The extent of the take is limited to the action area.

2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to require ODOT to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The Coos Bay Railroad Bridge Rehabilitation Project includes a set of "conservation measures" designed to minimize take of ESA-listed species. These are described on pages 36 to 42 of the October 25, 2002 BA. Specific measures for in-water and bank work, clearing and grubbing, bridge rehabilitation, erosion control, hazardous materials, and site-specific conservation and habitat remediation measures are also included.

NOAA Fisheries believes that the following reasonable and prudent measures, along with the conservation measures described in the BA, are necessary and appropriate to minimize the likelihood of take of ESA-listed fish resulting from implementation of this Opinion. These reasonable and prudent measures would also minimize adverse effects to designated critical habitat.

The FHWA shall:

1. Minimize the likelihood of incidental take by limiting the time of in-water work as necessary to avoid harming vulnerable salmon life stages, including migration and rearing.

2. Minimize the likelihood of incidental take from in-water work by ensuring that the in-water work areas are isolated from flowing water.
3. Minimize the amount and extent of incidental take from construction activities in or near the waterway through development and implementation of effective erosion and pollution control measures throughout the area of disturbance and for the life of the project.

4. Minimize the amount and extent of take from loss of instream habitat by implementing measures to minimize impacts to riparian and instream habitat, or where impacts are unavoidable, to replace or restore lost riparian and instream functions.

5. Ensure effectiveness of implementation of the reasonable and prudent measures, all fish handling, and erosion control measures through monitoring and evaluation both during and following construction.

2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (in-water timing and minimizing the extent of in-water work), the FHWA shall ensure that:
    a. Construction impacts will be confined to the minimum area necessary to complete the project.
        i. Survey and mark the MHHT at the project site prior to commencement of work.
        ii. All work within the active channel that could potentially contribute sediment or toxicants to downstream fish-bearing waters will be completed within the ODFW in-water work period (October 1 to February 15).
    b. Extensions of the in-water work period, including those for work outside the wetted stream perimeter but below the MHHT, must have the concurrence of a NOAA Fisheries biologist.

2. To implement reasonable and prudent measure #2 (isolation of in-water work area and proper fish handling methods), the FHWA shall ensure that the work area is well isolated from the active flowing stream within a coffer dam (constructed of sandbags, sheet pilings, inflatable bags, *etc.*), or a similar structure, in order to minimize the potential for sediment entrainment. The FHWA shall also ensure that during fish capture and salvage NOAA Fisheries-approved fish handling techniques will be practiced.
    a. During in-water work within the MHHT, if the project involves either significant channel disturbance or use of equipment within the wetted channel, ensure that the work area is well isolated from the active flowing stream within a cofferdam (constructed of sand bags, sheet pilings, inflatable bags, *etc.*) or similar structure,

to minimize the potential for sediment entrainment. After the coffer dam is in place, any fish trapped in the isolation pool will be removed by a permitted ODOT and/or ODFW biologist prior to de-watering, using NOAA Fisheries-approved methods.

i. Any water intake structure authorized under this Opinion must have a fish screen installed, operated and maintained in compliance with NOAA Fisheries' fish screen criteria.
   (1) Water pumped from the work isolation area will be discharged into an upland area providing over-ground flow before returning to the creek. Discharge will occur so that it does not cause erosion.
   (2) Discharges into potential fish spawning areas or areas with submerged vegetation are prohibited.

ii. Fish Salvage.
   (1) Prior to and intermittently during pumping, attempts will be made to salvage and release fish from the work isolation area as is prudent to minimize risk of injury. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:
      (a) Seining will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.
      (b) ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary, to prevent the added stress of an out-of-water transfer.
      (c) Seined fish must be released as near as possible to capture sites.
      (d) The transfer of any ESA-listed fish from the applicant to third-parties other than NOAA Fisheries personnel requires written approval from NOAA Fisheries.
      (e) The applicant must obtain any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities.
      (f) The applicant must allow NOAA Fisheries, or its designated representative, to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.
      (g) A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to

isolate the work area and minimize disturbances to ESA-listed species, stream conditions prior to and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

iii. If fish salvaging requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NMFS 1998):

(1) Electrofishing may not occur in the vicinity of listed adults in spawning condition or in the vicinity of redds containing eggs.

(2) Equipment must be in good working condition. Operators must go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a log.

(3) A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader's experience must be documented and available for confirmation; such documentation may be in the form of a logbook. The training must occur before an inexperienced crew begins any electrofishing, and must also be conducted in waters that do not contain listed fish.

(4) Measure conductivity and set voltage as follows:

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

(5) Direct current (DC) must be used at all times.

(6) Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. In general, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

(7) The zone of potential fish injury is 0.5 m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

(8) The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

(9) The crew must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of

injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

(10) Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

(11) The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.

iv. Fish Passage. Passage shall be provided for both adult and juvenile forms of salmonid species throughout the construction period. The FHWA/ODOT will ensure passage of fish as per ORS 498.268 and ORS 509.605 (Oregon's fish passage guidance).

3. To implement reasonable and prudent measure #3 (erosion and pollution control), the FHWA will ensure that:

a. The Contractor will develop and implement a site-specific spill prevention, containment, and control plan (SPCCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the ODOT Engineer to ensure compliance with this SPCCP.

b. Material removed during excavation will only be placed in locations that prevent their entry into streams, wetlands, or other water bodies.

c. During excavation, native streambed materials will be stockpiled above the MHHT.

d. The following erosion and pollution control materials are onsite:

i. A supply of erosion control materials (*e.g.*, silt fence and straw bales) is on site to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.

ii. An oil-absorbing, floating boom is available on-site during all phases of construction.

iii. All temporary erosion controls (*e.g.*, straw bales, silt fences) are in place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. All exposed or disturbed areas will be stabilized to prevent erosion.

i. Areas of bare soil within 45 m of waterways, wetlands or other sensitive areas will be stabilized by native seeding[1], mulching, and placement of

[1]By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

erosion control blankets and mats, if applicable, within 14 days of exposure.

ii. All other areas will be stabilized quickly as reasonable, but within 14 days of exposure.

iii. Seeding outside of the growing season will not be considered adequate nor permanent stabilization.

f. All erosion control devices will be inspected during construction to ensure that they are working adequately.

i. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, and monthly on inactive sites.

ii. If inspection shows that the erosion controls are ineffective, work crews will be mobilized immediately, during working and off-hours, to make repairs, install replacements, or install additional controls as necessary.

g. Erosion control measures will be judged ineffective when turbidity plumes are evident in waters occupied by listed salmonids during any part of the year.

h. If soil erosion and sediment resulting from construction activities is not effectively controlled, the engineer will limit the amount of disturbed area to that which can be adequately controlled.

i. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 cm. Catch basins will be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.

j. Sediment-laden water created by construction activity will be filtered before it leaves the right-of-way or enters a stream or other water body.

k. Any hazardous materials spill will be reported to NOAA Fisheries.

i. In the event of a hazardous materials or petrochemical spill, immediate action shall be taken to recovery toxic materials from further impacting aquatic or riparian resources.

ii. In the event of a hazardous materials or petrochemical spill, a detailed description of the quantity, type, source, reason for the spill, and actions taken to recover materials will be documented. The documentation should include photographs.

l. The bridge, barge, containment structure, and other work platforms will have containment measures in place that minimize any potential of petrochemicals or hazardous materials from entering the river.

i. The bridge, barge, containment structure, and other work platforms shall be constructed to self-contain petrochemicals and hazardous materials.

ii. The bridge, barge, containment structure, and other work platforms will be maintained to preserve containment integrity throughout the term of the project.

m. Refueling and hazardous materials.

i. All staging and refueling shall occur at least 45 m from the MHHT, except as stated below.

(1) Fuel storage locations within 45 m of the MHHT shall have containment measures in place that meet or exceed 100% containment.
(2) No auxiliary fuel tanks are stored within 45 m of the MHHT.

ii. Hazardous materials stored within 45 m of the MHHT shall have containment measures in place that meet or exceed 100% containment.

iii. The barges used for construction operations implement the following condition:
(1) No hazardous materials will be stored on the barge or other work platforms.
(2) Barge use is limited to construction operations associated with the scour protection activities.
(3) The refueling plans for barge operations are submitted to NOAA Fisheries for review and approval prior to any on-the-ground construction operations.

4. To implement reasonable and prudent measure #4 (minimizing loss of instream habitat), FHWA will ensure that:
   a. During excavation, native streambed material will be stockpiled out of the two-year flood plain.
   b. During project design ODOT will work to minimize the amount of riprap used. Where riprap is necessary, only clean, non-erodible, upland angular rock of sufficient size for long-term armoring will be employed. Riprap will not be "end-dumped" within the wetted channel.
   c. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration whenever possible.
   d. Temporary access roads will be designed as follows:
      i. Temporary access roads will not cross streams.
      ii. Alteration of existing native vegetation will be minimized in the construction, use, and maintenance of temporary access roads.
      iii. Existing roadways or travel paths will be used whenever reasonable.
      iv. Vehicles and machinery must cross riparian areas at right angles to the main channel wherever reasonable.
      v. Temporary roads within 45 m of streams will avoid, minimize and mitigate soil disturbance and compaction by clearing vegetation to ground level and placing clean gravel over geotextile fabric.
      vi. No treated wood may be used within or above the MHHT.
   e. All project operations, except efforts to minimize storm or high flow erosion, will cease under high flow conditions that may result in inundation of the immediate work area.

5. To implement reasonable and prudent measure #7 (monitoring and reporting), the FHWA shall ensure that:

a. Within 90 days of completing the project, the FHWA/ODOT will submit a monitoring report to NOAA Fisheries describing success in meeting their permit conditions. This report will consist of the following information:

i. Project identification.
   (1) Project name.
   (2) Starting and ending dates of work completed for this project.
   (3) The FHWA contact person.
   (4) Monitoring reports shall be submitted to:
   NOAA Fisheries
   Oregon Habitat Branch, Habitat Conservation Division
   Attn: 2002/01274
   525 NE Oregon Street, Suite 500
   Portland, OR 97232-2778

ii. Isolation of in-water work area. A report of any fish salvage activity including:
   (1) The name and address of the supervisory fish biologist.
   (2) Methods used to isolate the work area and minimize disturbances to ESA-listed species.
   (3) Stream conditions before and following placement and removal of barriers.
   (4) The means of fish removal.
   (5) The number of fish removed by species.
   (6) The location and condition of all fish released.
   (7) Any incidence of observed injury or mortality.

iii. Pollution and erosion control.
   (1) A summary of pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iv. A narrative assessment of the project's effects on natural stream function.

v. Photographic documentation of environmental conditions at the project site and compensatory mitigation site(s) (if any) before, during and after project completion.
   (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
   (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
   (3) Relevant habitat conditions including characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

vi. Post-construction impacts.

(1) The FHWA/ODOT shall assess the project's impacts, temporary and permanent, and compare them to the impacts assessed in the 2002 BA. This written assessment will be provided to NOAA Fisheries for review. If the actual impacts exceed those outlined in the BA then the FHWA/ODOT will provide additional mitigation to offset those impacts.

3. MAGNUSON-STEVENS ACT

3.1 Background

On October 30, NOAA Fisheries received a letter from FHWA requesting essential fish habitat (EFH) consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for the subject action. The objective of the EFH consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action. This consultation is undertaken pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR 600).

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

1. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

2. NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH.

3. Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and up slope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km)(PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and long-standing, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California, north of Point Conception to the Canadian border.

Detailed descriptions and identifications of EFH for the groundfish species are found in the Final Environmental Assessment/Regulatory Impact Review for Amendment 11 to *The Pacific Coast Groundfish Management Plan* (PFMC 1998a) and the NMFS *Essential Fish Habitat for West Coast Groundfish Appendix* (Casillas *et al.* 1998). Detailed descriptions and identifications of EFH for the coastal pelagic species are found in Amendment 8 to the *Coastal Pelagic Species Fishery Management Plan* (PFMC 1998b). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed actions are detailed in section 1.2. The action area is defined as Coos Bay, 500 m upstream and downstream of the Coos Bay Railroad Bridge. The Coos Bay area has been designated as EFH for various life stages of chinook salmon, coho salmon, coastal pelagic, and groundfish species (Table 1).

3.5 Effects of Proposed Action

The proposed action is reasonably certain to cause short-term degradation of EFH due to increases in total suspended solids, suspension and redistribution of contaminated sediments, and temporary degradation of benthic habitat for macro invertebrates.

3.6 Conclusion

NOAA Fisheries believes that the proposed action will adversely affect EFH for Pacific salmon, coastal pelagic, and groundfish species.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation recommendations outlined above in the BA (pages 36-42) and all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2 and 2.3 are applicable to Pacific salmon and ground fishes. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

Table 1. Species with designated EFH found in waters of the State of Oregon.

Ground Fish Species	Blue rockfish (*S. mystinus*)	Rougheye rockfish (*S. aleutianus*)	Flathead sole (*Hippoglossoides elassodon*)
Leopard shark (*Triakis semifasciata*)	Bocaccio (*S. paucispinis*)	Sharpchin rockfish (*S. zacentrus*)	Pacific sanddab (*Citharichthys sordidus*)
Soupfin shark (*Galeorhinus zyopterus*)	Brown rockfish (*S. auriculatus*)	Shortbelly rockfish (*S. jordani*)	Petrale sole (*Eopsetta jordani*)
Spiny dogfish (*Squalus acanthias*)	Canary rockfish (*S. pinniger*)	Shortraker rockfish (*S. borealis*)	Rex sole (*Glyptocephalus zachirus*)
Big skate (*Raja binoculata*)	Chilipepper (*S. goodei*)	Silvergray rockfish (*S. brevispinus*)	Rock sole (*Lepidopsetta bilineata*)
California skate (*R. inornata*)	China rockfish (*S. nebulosus*)	Speckled rockfish (*S. ovalis*)	Sand sole (*Psettichthys melanostictus*)
Longnose skate (*R. rhina*)	Copper rockfish (*S. caurinus*)	Splitnose rockfish (*S. diploproa*)	Starry flounder (*Platyichthys stellatus*)
Ratfish (*Hydrolagus colliei*)	Darkblotched rockfish (*S. crameri*)	Stripetail rockfish (*S. saxicola*)	
Pacific rattail (*Coryphaenoides acrolepsis*)	Grass rockfish (*S. rastrelliger*)	Tiger rockfish (*S. nigrocinctus*)	**Coastal Pelagic Species**
Lingcod (*Ophiodon elongatus*)	Greenspotted rockfish (*S. chlorostictus*)	Vermillion rockfish (*S. miniatus*)	Northern anchovy (*Engraulis mordax*)
Cabezon (*Scorpaenichthys marmoratus*)	Greenstriped rockfish (*S. elongatus*)	Widow Rockfish (*S. entomelas*)	Pacific sardine (*Sardinops sagax*)
Kelp greenling (*Hexagrammos decagrammus*)	Longspine thornyhead (*Sebastolobus altivelis*)	Yelloweye rockfish (*S. ruberrimus*)	Pacific mackerel (*Scomber japonicus*)
Pacific cod (*Gadus macrocephalus*)	Shortspine thornyhead (*Sebastolobus alascanus*)	Yellowmouth rockfish (*S. reedi*)	Jack mackerel (*Trachurus symmetricus*)
Pacific whiting (Hake) (*Merluccius productus*)	Pacific Ocean perch (*S. alutus*)	Yellowtail rockfish (*S. flavidus*)	Market squid (*Loligo opalescens*)
Sablefish (*Anoplopoma fimbria*)	Quillback rockfish (*S. maliger*)	Arrowtooth flounder (*Atheresthes stomias*)	
Aurora rockfish (*Sebastes aurora*)	Redbanded rockfish (*S. babcocki*)	Butter sole (*Isopsetta isolepsis*)	**Salmon**
Bank Rockfish (*S. rufus*)	Redstripe rockfish (*S. proriger*)	Curlfin sole (*Pleuronichthys decurrens*)	Coho salmon (*O. kisutch*)
Black rockfish (*S. melanops*)	Rosethorn rockfish (*S . helvomaculatus*)	Dover sole (*Microstomus pacificus*)	Chinook salmon (*O. tshawytscha*)
Blackgill rockfish (*S. melanostomus*)	Rosy rockfish (*S. rosaceus*)	English sole (*Parophrys vetulus*)	

3.8 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if either action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

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